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I. NOTES OF INTEREST

A. Vegetable Crops Calendar.

March 11-15, 1991. Horticultural Sciences Course HOS 5330 "Commercial Harvesting and Postharvest Handling of Horticultural Crops." Available for 1 graduate credit or 1 Continuing Education Unit. Contact Dr. Steve Sargent for more information (904) 392-7911).

May 16, 1991. Gulf Coast REC Vegetable Field Day, 8:45 am. A box lunch and three field plot tours featuring (1) plant improvement, (2) plant protection, and (3) plant production research are scheduled throughout the remainder of the day. Contact Dr. Don Maynard or Dr. John Paul Jones for information (813-755-1568).

II. COMMERCIAL VEGETABLES

A. Changes to Soil Testing Report Form.

The current format of the IFAS Extension Soil Testing Laboratory soil-test report will be changed in the near future. In addition to reporting the soil pH and the Adams-Evans Buffer, the target pH of the client-specified crop will also be reported. The target pH is that pH which is identified as an appropriate pH to which to adjust the soil pH to avoid aluminum toxicity, improve nutrient availability, and minimize the adverse effects of possible overliming. With some crops, the target pH may also include consideration of soil pH impact on diseases on pests.

Secondly, fertilizer recommendations for vegetables and ornamental commodities will be reported in two sets of units. Vegetable fertilizer recommendations will be reported in the traditional pounds per acre and in pounds per 100 linear bed feet. The new units are based upon a typical bed spacing which will be reported along with the total linear bed feet in 1 acre. More information on use of these units can be found in "Notes in Soil Science" No 32 (SS-SOS-901) "Calculating fertilizer rates for vegetable crops grown in raised-bed cultural systems in Florida."

Ornamental fertilizer recommendations will be reported in both pounds per acre and in pounds per 1,000 square feet per year. Use of this new scale will also apply to the limestone recommendation for ornamentals.

(Hanlon, Vegetarian 91-03)

B. Chlorinated Water Effects on Plants.

Municipal water sources add Chlorine to the water to prevent microbial formation. Does this free Chlorine pose a problem to landscape and household plants? No. The amount of Chlorine which is injected is very small, usually on the order of 1 ppm, and no toxic problems have been reported from such low levels. In fact, commercial growers using microirrigation should be injecting Chlorine to keep the tubing emitter clean and free of microbial activity which can plug emitters.

In household situations, exposing the water to the air is often enough to reduce the free Chlorine to extremely low levels. Sprinkler irrigation of lawns, for example, will lower the free Chlorine content and pose no problem to the grass. If a homeowner is concerned with free Chlorine in the water, allowing a container filled with the water to sit for several hours before using the water on indoor plants will greatly reduce the free Chlorine content. However, the added precaution is really not needed. Proper watering of household plants should be more of a concern. All water sources contain salts, which can build up if pots are not irrigated correctly. If salts do build up and plant growth is affected, the homeowner can leach the container media (allow excess water to drain out of the pot and remove it from the catchment pan). If this process does not appear to be working, the
homeowner can occasionally repot the plant adding additional container media around the root ball.

(Hanlon, Vegetarian 91-03)

C. A Case for Organic Farming?

In case you missed a small article in the February 1, 1991, issue of Science, I am going to give you a review. According to David Pimentel, an agricultural scientist at Cornell University, organic farming is not some luxury pursued by fuzzy-minded counterculturists and health-obsessed yuppies. Rather, it is a matter of economics. The tonnage of agricultural chemical pesticides applied to U.S. crop land has grown 33-fold since the 1940s, and their toxicity has grown roughly 10-fold. Yet, crop losses to insects, fungi, and weeds have actually increased from 31 to 37%. This is due in part to insects ability to develop resistance to pesticides. Farmers have tended also to specialize in single crops instead of rotating them to keep down the pest populations.

Pimentel maintains if farmers could cut their use of chemical pesticides in half - which could be done by employing such well-proven alternatives as crop rotation and biological pest control - then food prices would rise by less than 1%, or about $1 billion/year. The benefits would be overwhelming. The nation would save from $4 to $10 billion/year in terms of decreased damage to fish and water supplies, decreased cost of pesticide regulation, and decreased health care cost for the 20,000 people a year who are poisoned by pesticides. The cost-benefit analysis of pesticide use is published in the Handbook on Pest Management in Agriculture, from CRC Press. It is a synthesis of more than 300 research reports. I will leave it up to the reader to punch holes in this type of economics or to accept it.

(White, Vegetarian 91-03)

D. Diagnostic Tissue Testing.

Plant tissue analysis is a tool for helping us diagnose suspected nutritional deficiencies or to help keep us on track in our fertilizer program. The keys to good tissue testing are:

1. Collect representative samples.
2. Collect the right diagnostic tissue, usually most-recently-matured leaves.
3. Collect "good" and "bad" samples.
4. Refer to tables of calibrated tissue norms for determining the critical nutrient levels with which to compare your lab results.

Soil testing can help diagnose problems but should only be viewed as an aid to good tissue testing. Values of nutrient levels in the soil are of limited value once fertilizer has been added to the soil. Soil samples taken after fertilizer has been applied will reflect those nutrient additions and thus could confuse the problem interpretation phase. Once the crop is growing and fertilization has begun, it is much better to let the plant tell us what is happening, i.e. tissue analyses.

There are some individuals using soil solution access tubes to sample the soil solution and then analyze the solution for nutrients. They base fertilizer additions on their analytical results. This process is based on hydroponic theory and thus is faulty. The main problems are:

1. There is large variation among samples within a field and even within the bed. It is difficult to obtain a representative sample.
2. If growers maintain hydroponic (Hoagland solution) levels of nutrients in the soil solution, then overfertilization will result, especially for N and K.
3. There is no research data with yield versus soil solution nutrient concentration for Florida. In other
words, this technique has not been calibrated for Florida conditions.

Instead of fertilizing by the hydroponic theory, we should focus on using nutrient application schedules developed for Florida. Then we should follow the progress of our fertilizer program by tissue testing, either standard lab analyses or plant sap quick tests, both of which have been calibrated for Florida vegetables. A good reference manual for tissue testing is the new Univ. of Fla. Coop. Extension Service publication Special Series SSVEC-42 "Plant tissue analysis and interpretation for Vegetable Crops in Florida". It will soon be available at County Extension offices.

(Hochmuth, Vegetarian 91-03)

E. Potential for Calabaza Production in Florida.

Calabaza (Cucurbita moschata (Duchesne) Poir. is a subtropical/tropical pumpkin frequently called Cuban pumpkin. 'La Primera', an improved cultivar, was introduced in 1979 by Dr. Ray Volin formerly of the IFAS Tropical Research and Education Center in Homestead. Unfortunately, commercial seed has not been available to growers who continue to use their own seed saved from season to season. Unfortunately, fruit shape and quality on plants from home-grown seed is not uniform. Recently, however, two seed suppliers have indicated an interest in increasing 'La Primera' seed and it may be available commercially in the near future.

Performance of 'La Primera' in spring 1987 and of two additional calabazas in fall 1990 at the Gulf Coast Research and Education Center was evaluated. In 1987, beds on 9 ft centers were prepared on 18 February including incorporation of 500 lb 0-20-0, fumigation with 50 lb Vorlex, and application of two surface bands of 1000 lb 18-0-25 per acre on the bed shoulders, and application of black polyethylene mulch. The crop was established by direct-seeding on 5 March using a 4 ft in-row spacing. The stand was adjusted by thinning to about 1200 plants per acre. The crop was seep-irrigated. Approved fungicides were applied for control of downy mildew and gummy stem blight.

The pumpkins were harvested on 25 June at which time the vines were beginning to deteriorate, and the most mature fruits were yellow-orange colored. Each fruit was weighed and counted.

In 1990, 'La Primera', 'El Segundo' (an unreleased selection developed by Dr. Volin), and a short-vined 'La Primera' (developed by Dr. G. W. Elmstrom) were evaluated at the Gulf Coast Research & Education Center. Beds on 9 ft centers were prepared on 2 July including incorporation of 242 lb 0-20-0, fumigation with 48 lb Vorlex, and application of two surface bands of 775 lb 15-0-30 per acre on the bed shoulders, and application of white polyethylene mulch. The crop was established by direct seeding on 16 July using 4 ft in-row spacing for 'La Primera' and 'El Segunda' and 2 ft in-row spacing for the short-vined selection. Sweetpotato whitefly control with approved insecticides was required in addition to the crop management practices used in 1987. The calabazas were harvested and weighed individually.

Yields and average fruit weight are shown in Table 1. Average fruit weight of 'La Primera' was less in 1990 than in 1987, but the number of fruit was greater so that yields (weight) were not greatly different in the two years. The average fruit weight of 15.5 lb is similar to the 16.2 lb reported in Homestead. Fruit weight of 'El Segundo' was 9.8 lb and that of the short-vined 'La Primera' was 6.1 lb. However, many more fruit were produced by the short-vined 'La Primera' so that the per acre yield of the two entries was similar.
Table 1. Calabaza yields and average fruit weight.

<table>
<thead>
<tr>
<th>Year</th>
<th>Entry</th>
<th>Fruit Yield Per Acre(^{1})</th>
<th>Average Fruit Weight (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Weight (cwt)</td>
<td></td>
</tr>
<tr>
<td>1987</td>
<td>La Primera</td>
<td>2574</td>
<td>550</td>
</tr>
<tr>
<td>1990</td>
<td>La Primera</td>
<td>3146</td>
<td>488</td>
</tr>
<tr>
<td></td>
<td>El Segundo</td>
<td>3025</td>
<td>301</td>
</tr>
<tr>
<td></td>
<td>La Primera SV</td>
<td>4840</td>
<td>292</td>
</tr>
</tbody>
</table>

\(^{1}\)4840 linear bed feet.

The distribution of fruit into various size classes is shown in Table 2. In 1987, most fruit of ‘La Primera’ ranged between 10.1 and 25 lb, however, 27% of the fruit were larger than 25.1 lb whereas only 3% of the fruit were less than 10 lb. The largest fruit weighed 53.2 lb. In 1990, most ‘La Primera’ fruit ranged from 10.1 to 20 lb and only 7% of the fruit exceeded 25 lb. The bulk of the ‘El Segundo’ fruit were between 5.1 and 15 lb, whereas most of the short-vined ‘La Primera’ fruit were less than 10 lb.

Table 2. Calabaza fruit weight distribution.

<table>
<thead>
<tr>
<th>Year</th>
<th>Entry</th>
<th>&lt;5</th>
<th>5.1-10</th>
<th>10.1-15</th>
<th>15.1-20</th>
<th>20.1-25</th>
<th>25.1-30</th>
<th>&gt;30</th>
</tr>
</thead>
<tbody>
<tr>
<td>1987</td>
<td>La Primera</td>
<td>0</td>
<td>3</td>
<td>18</td>
<td>29</td>
<td>23</td>
<td>14</td>
<td>13</td>
</tr>
<tr>
<td>1990</td>
<td>La Primera</td>
<td>0</td>
<td>16</td>
<td>33</td>
<td>38</td>
<td>6</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>El Segundo</td>
<td>8</td>
<td>50</td>
<td>35</td>
<td>5</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>La Primera SV</td>
<td>41</td>
<td>51</td>
<td>9</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Calabaza is a high quality, tropical-type pumpkin widely used by Hispanics. Although it is virtually unknown to other segments of the population, there is reason to believe that it would be accepted for culinary use in the same way that butternut or similar type squash is now used, including use as a pie filling. The large fruit size of ‘La Primera’ might discourage some consumers, but retailers could consider selling halves or quarters like watermelon. Another option would be to sell peeled and cubed calabaza in preweighed polyethylene bags as a convenience vegetable. When commercially available, the fruit size of the short-vined ‘La Primera’ would be suitable for whole fruit sales.

Growers are advised to establish a definite market before planting calabaza.

(Maynard & Elmstrom, Vegetarian 91-03)
PESTICIDE UPDATE

A. Third Party Registration for Bolero 8 EC in Celery, Lettuce, Endive and Escarole.

Thiobencarb (Bolero 8 EC) has received supplemental labelling as a special local need for control of purslane and barnyardgrass in celery, lettuce, endive, and escarole grown on muck soils.

The distribution and use of the label is limited within Florida to persons who have signed authorization and waiver agreements with Third Party Registrations, Inc (TPR) who is the 24(c) registrant. The label must be in the possession of the user at the time of pesticide application.

Celery - (muck soils only). Make a single application of 6-8 pints Bolero 8 EC per acre after transplanting and prior to weed emergence. Apply in 20 to 40 gallons of water per acre no later than 10 days after transplanting. Do not apply within 70 days of harvest.

Lettuce, endive, and escarole - (muck soils only). Make a single application of 4-6 pints Bolero 8 EC per acre at seeding or post-transplant prior to weed emergence. Apply in 20-40 gallons of water per acre no later than 10 days after planting. Do not apply within 60 days of harvest.

For best performance, soil must be wet at the time of application. Additional moisture (overhead irrigation) after application may improve performance, but may increase phytotoxicity.

(Stall, Vegetarian 91-03)

B. Expansion of Third Party Registration Label for Dual on Cabbage.

Metolachlor (Dual) has received an expanded label for use on transplanted and direct seeded cabbage. The distribution and use of the supplemental labelling is limited within Florida to persons who have signed authorization and waiver agreements with Third Party Registrations, Inc, who is the 24(c) registrant. The label must be in possession of the user at the time of pesticide application.

Transplanted Cabbage. Apply Dual 8 E to transplanted tight-headed cabbage at a broadcast rate of 1.25 - 3.0 lbs ai/A (1.25-3.0 pts). Use the lower rate on soils relatively course-textured and/or low in organic matter; use the higher rate on soils relatively fine textured and/or high in organic matter. Application should be made immediately after transplanting to plants that are at least 5 weeks old or grown in 1" diameter cells or larger. Chinese varieties are more sensitive to Dual injury. Use the lower rates as determined for soil type.

Direct Seeded Cabbage. Apply Dual 8 E as a broadcast preemergence or postemergence spray to direct seeded tight-headed cabbage at rates of 1.25-6.0 lbs ai/A (1.25-6.0 pts). Preemergence applications should be made immediately after seeding. Post emergence applications should be made at least 20 days after seeding. Applications should be made in a minimum of 20 gallons of water per acre. Apply only once per crop season. Chinese varieties are more sensitive to Dual injury. Use the lower rates as determined for soil type.

<table>
<thead>
<tr>
<th>Soil Type</th>
<th>Pints Per Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sandy</td>
<td>1.25-2.0</td>
</tr>
<tr>
<td>Organic</td>
<td>3.0-6.0</td>
</tr>
</tbody>
</table>

The use of Dual may result in leaf crinkling or cupping and twisting. Delayed maturity can be anticipated at higher rates. Climatic conditions during the growing season will affect Dual efficacy and phytotoxicity.

(Stall, Vegetarian 91-03)
C. Precautionary Statement for Bravo 720 Use on Watermelons Issued by ISK Biotech.

For the past three seasons, problems have been observed in the southeastern United States on certain watermelon varieties which incurred surface injury on the fruit due to "sunburn." Injury of this nature was usually associated with maturing watermelons which are poorly covered with foliage, primarily following periods of intense sunlight and high temperature.

In some isolated cases, enhanced severity of this naturally occurring sunburn was reported following applications of Bravo 720. In some instances, tank mixes with foliar fertilizer and surfactants, especially vegetable oils, have been reported to increase sunburn symptoms. Field research trials over the past three years by ISK Biotech and university personnel to confirm scientific causes of this condition are inconclusive at this time; however, most injury symptoms were reported to occur on fruit close to maturity. In some tests, applications of water alone have been shown to enhance sunburn symptoms. Testing will continue in 1991 in an effort to document potential solutions for these effects.

Below are application directions we believe watermelon growers should follow until more definitive information becomes available:

* Do not tank mix Bravo 720 with any other product on watermelons. This includes all crop protection products, foliar fertilizers, surfactants, spreaders, stickers, and oils.

* Do not apply Bravo 720 to watermelon fruit within 21 days of first harvest if periods of intense sunlight and high temperature are expected.

* Do not apply Bravo 720 to watermelon fruit within 21 days of harvest when vines do not provide proper shading of fruit, or if vines are stressed due to drought.

(Maynard, Vegetarian 91-03)